Inventor: Alex Lopez-Estrada
Title of Invention: Reduction of Address Aliasing
Attorney Docket No.: 42339-193224
VENABLE

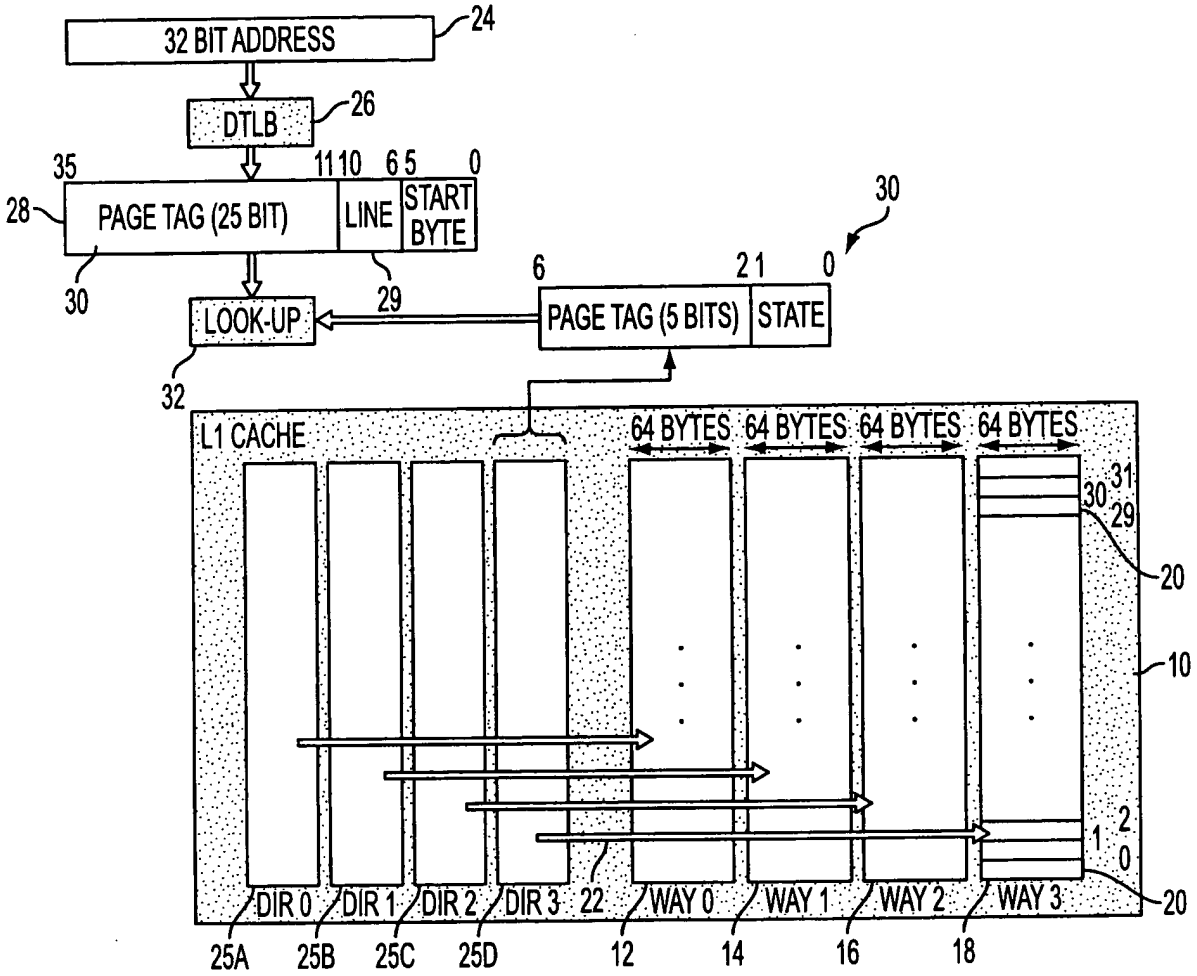

FIG. 1

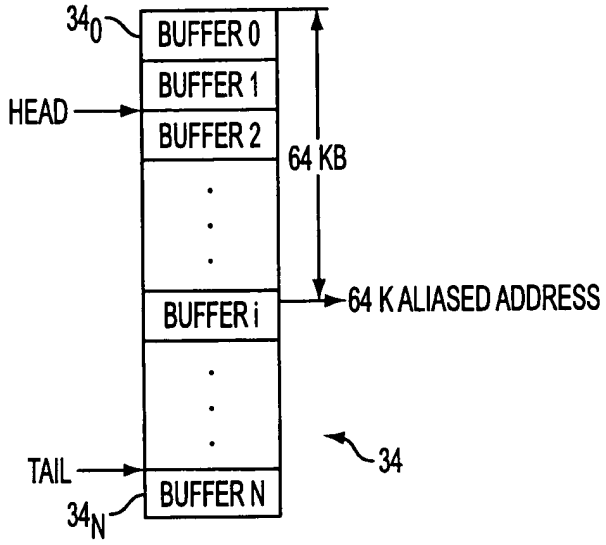
34_0
BUFFER 0
BUFFER 1
HEAD
BUFFER 2
64 KB
BUFFER i
64 K ALIASED ADDRESS
34
TAIL
BUFFER N
34_N

FIG. 2

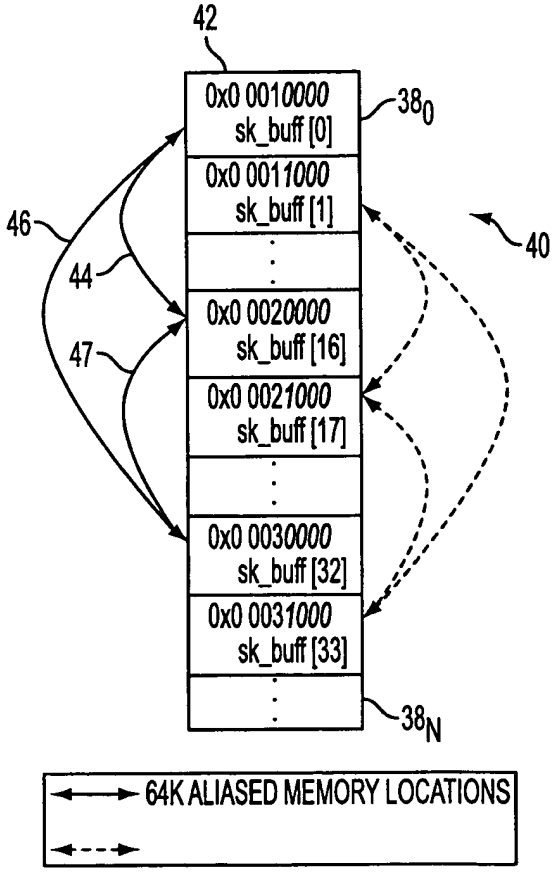
42
0x0 0010000
sk_buff [0]
38_0
0x0 0011000
sk_buff [1]
46
40
44
0x0 0020000
sk_buff [16]
47
0x0 0021000
sk_buff [17]
0x0 0030000
sk_buff [32]
0x0 0031000
sk_buff [33]
38_N
64K ALIASED MEMORY LOCATIONS

FIG. 3

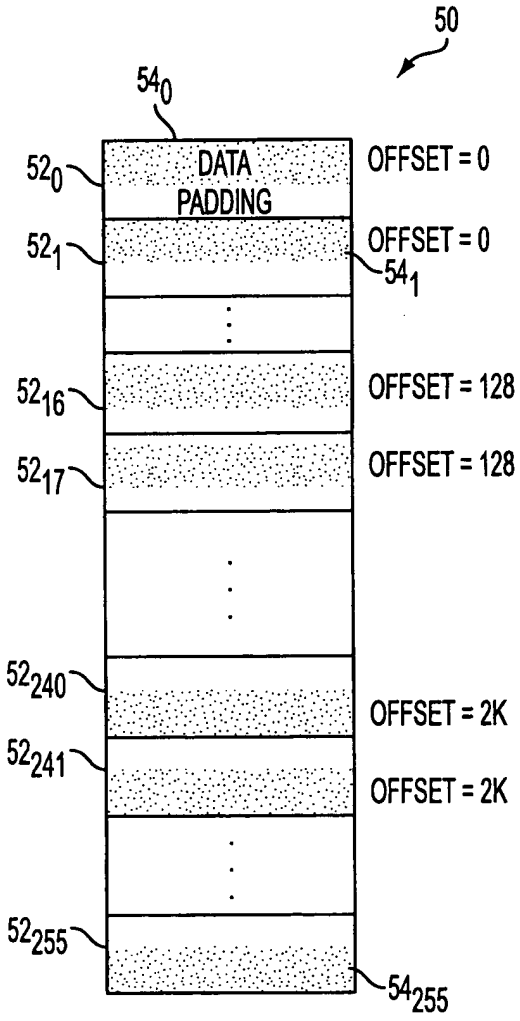
50
54_0
52_0
DATA
PADDING
OFFSET = 0
52_1
OFFSET = 0
54_1
52_{16}
OFFSET = 128
52_{17}
OFFSET = 128
52_{240}
OFFSET = 2K
52_{241}
OFFSET = 2K
52_{255}
54_{255}

FIG. 4

```
/* Allocation of skb's */
someSkbAllocationRoutine()
{
    /* Keep a counter for each of the 16 potential
     * alias locations for the case of 4K buffers.
     * The counters must intialized to 0 */
    static int aliasCounter[16];

    for( i=0; i<16; i++)
    {
        /* Allocate buffer of specified size */
        buffer = allocateSkb( size );

        /* The counter array is indexed by bits
         *  12 through 15 of the buffer address,
         *  in the case of 4KB buffers */
        aliasCounterIdx= (buffer & 0x0000F000) >> 12;

        /* Offset by the counter amount and increment
         * the counter */
        skb[i]=buffer+ aliasCounter[aliasCounterIdx]*128;
        alias_counter[aliasCounterIdx]=
          (alias_counter[aliasCounterIdx]+1)&0x0000000F;
    }
}
```

FIG. 5

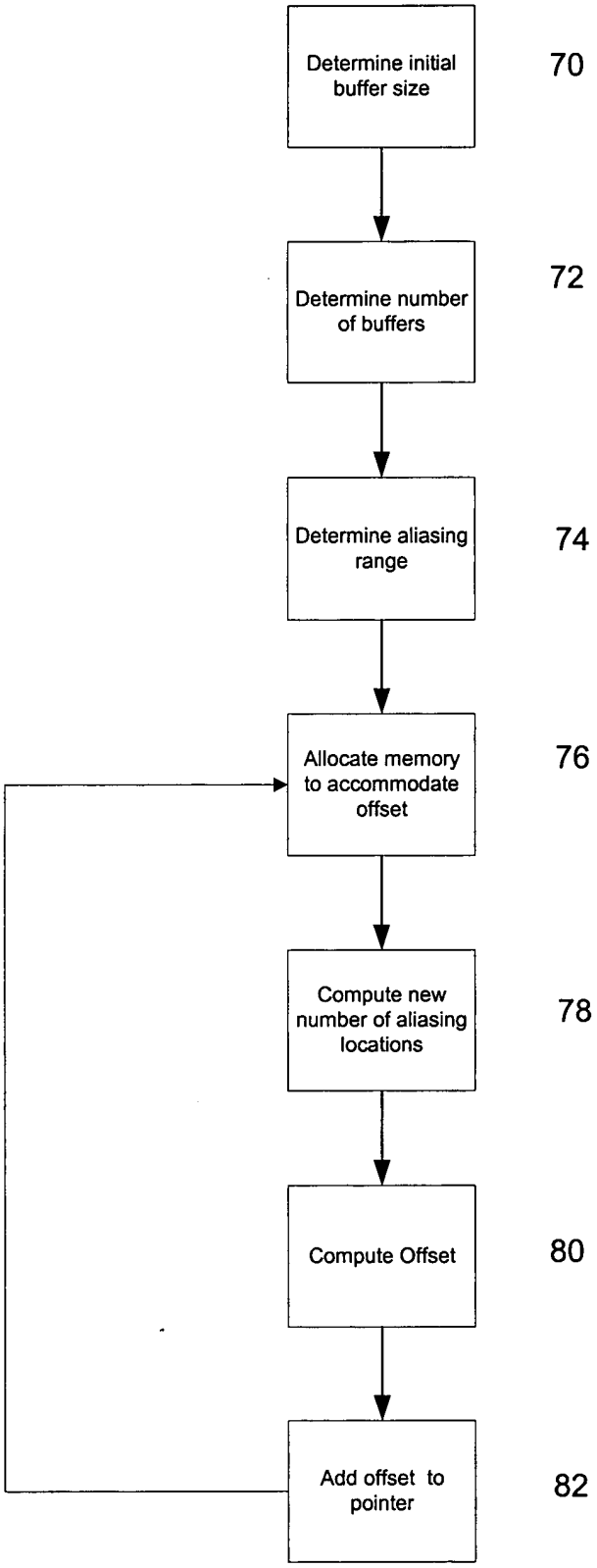
Determine initial buffer size
70
Determine number of buffers
72
Determine aliasing range
74
Allocate memory to accommodate offset
76
Compute new number of aliasing locations
78
Compute Offset
80
Add offset to pointer
82

FIG. 6